

Appl. No. 09/687,436
Amdt. dated July 19, 2004
Reply to Office Action of May 20, 2004

REMARKS

In the Office Action dated May 20, 2004, claims 1, 5, 6-9, 11, 13, and 14 were rejected under 35 U.S.C. § 102 over U.S. Patent No. 6,515,963 (Bechtolsheim); and claims 2-4, 10, 12, and 15-17 were rejected under § 103 over Bechtolsheim in view of U.S. Patent No. 6,438,704 (Harris).

It is respectfully submitted that claim 1 is not anticipated by Bechtolsheim. Note that claim 1 recites:

- granting a request if the request if allowed would not exceed a *soft limit* of a potential user,
- denying the request if the request if allowed would exceed a *hard limit* of the potential user, *and*
- denying the request if the request if allowed would cause a grand total allocation of the resource to exceed a *high watermark*.

The Office Action cited to Figures 3, 9, and 10, and the accompanying description, of Bechtolsheim as teaching the elements of claim 1. Note that Figures 3, 9, and 10 depict *alternative* embodiments of a dynamic buffer mechanism described in Bechtolsheim. As depicted in Figure 3 of Bechtolsheim, which is one embodiment, a buffer count value is compared with a dynamic buffer limit (step 320). Enqueuing of an incoming packet is performed if the buffer count is less than or equal to the dynamic buffer limit (step 330) of Bechtolsheim. On the other hand, the packet is tagged if the buffer count is greater than the dynamic buffer limit (step 340 of Figure 3 of Bechtolsheim). Figure 3 of Bechtolsheim does not depict a soft limit *and* a hard limit--Figure 3 of Bechtolsheim only depicts one limit, namely the dynamic buffer limit. Therefore, the Figure 3 embodiment of Bechtolsheim cannot satisfy claim 1.

In Figure 9, which depicts an *alternative* embodiment (Bechtolsheim, 4:46-47), the buffer count is compared with a soft limit and a hard limit (step 905 of Figure 9 of Bechtolsheim). If the buffer count is less than or equal to a soft limit, then the packet is enqueued (step 330 of Figure 9 of Bechtolsheim). However, if the buffer count is greater than a soft limit or less than or equal to a hard limit, the incoming packet is tagged (step

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340 of Figure 9 of Bechtolsheim). If the buffer count is greater than a hard limit, then the packet is dropped (step 650 of Figure 9 of Bechtolsheim).

Although the Figure 9 embodiment of Bechtolsheim refers to use of a soft limit and hard limit, Bechtolsheim fails to disclose denying the request if the request if allowed would cause a grand total allocation of the resource to exceed a *high watermark* assigned to a resource and granting a request otherwise. Figure 9 only depicts a comparison of a buffer count with a soft limit and a hard limit. No separate "high watermark" is factored into the decision making process of the dynamic buffer management mechanism of the Figure 9 embodiment of Bechtolsheim. Therefore, the Figure 9 embodiment also does not disclose the subject matter of claim 1.

Figure 10 (also cited by the Office Action) describes yet another *alternative* embodiment (referred to as the "reserve alternative" embodiment). Bechtolsheim, 13:35-40. In the reserve alternative embodiment, a device-wide reserve pool of buffer cells is maintained. Bechtolsheim, 13:40-42. A number of free buffer cells is compared to a reserve for an appropriate type of service, and the incoming packet is tagged (step 340 in Figure 10), rather than tested against the dynamic buffer limit 320, if the number of free cells on arrival of the incoming packet is less than the total reserve set aside for packets of a higher precedence level. Bechtolsheim, 13:46-49. Although the Figure 10 embodiment involves the comparison of the number of free buffer cells with a reserve number of buffer cells, and the comparison of the buffer count with a dynamic buffer limit, the Figure 10 embodiment makes no use of a soft limit and a hard limit, as recited in claim 1. Note that Figure 10 depicts an *alternative* embodiment that is different from the independent embodiments of Figures 3 and 9 of Bechtolsheim. Therefore, the Figure 10 embodiment also does not disclose the subject matter of claim 1.

In the rejection of claim 1, the Office Action cited to all three Figures (3, 9, 10) as if all three Figures pertain to one embodiment. That is clearly not the case, as the buffer management mechanism is implemented in a number different, independent ways, as described in connection with Figures 3, 9, and 10 of Bechtolsheim. None of the embodiments of Bechtolsheim perform the last three acts of claim 1.

A further defect of the teachings pertaining to the Figure 10 embodiment of Bechtolsheim is that the comparison of the number of free buffer cells with the reserve

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value does not constitute denying the request if the request *if allowed* would cause a grand total allocation of the resource to exceed the high watermark. As explained by Bechtolsheim, the number of free cells compared to the reserve value is the number of free cells *on* the arrival of the incoming packet. In other words, if the number of free cells is already greater than the reserve value, then any incoming packet would be denied, regardless of the resource requirements of the incoming packet. In contrast, claim 1 recites that the request is denied if the request *if allowed* would *cause* a grand total allocation of the resource to exceed the high watermark. This implies that the current request under consideration factors into the decision of whether the request is denied or not. That is clearly not the case in the Figure 10 embodiment of Bechtolsheim.

In view of the foregoing, it is respectfully submitted that claim 1 is not anticipated by Bechtolsheim.

Similarly, independent claim 11 is also allowable over Bechtolsheim.

Bechtolsheim does not disclose a resource manager that in a normal mode:

- grants a request if the request if allowed would not exceed a *soft limit*,
- denies the request if the request if allowed would exceed a *hard limit*, and
- denies the request if the request if allowed would cause a grand total allocation of the resource to exceed the *high watermark*.

As explained above, Figure 3 of Bechtolsheim does not disclose a soft limit and a hard limit, and Figure 9 of Bechtolsheim fails to disclose denying the request if the request if allowed would cause a grand total allocation of the resource to exceed the *high watermark*, in conjunction with granting and denying of the request based on a soft limit and hard limit.

Figure 10 of Bechtolsheim fails to disclose the soft limit and hard limit recited in claim 11. Moreover, the comparison of the number of free buffer cells with a reserve value does not take into account the requirements of the current incoming packet. Therefore, Bechtolsheim cannot satisfy the element in claim 1 of denying the request if the request *if allowed* would *cause* a grand total allocation of the resource to exceed the high watermark. Therefore, claim 11 is not anticipated by Bechtolsheim.

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Claims dependent from independent claims 1 and 11 are allowable for at least the reason that Bechtolsheim fails to disclose the subject matter of the independent claims.

Dependent claims 2-4, 10, 12, and 15-17 were rejected as being obvious over the asserted combination of Bechtolsheim and Harris. To establish a *prima facie* case of obviousness, at least the following two requirements must be satisfied: (1) there must be some motivation or suggestion to combine the teachings of the references; and (2) the references when combined must teach or suggest *all* elements of the claim. See MPEP § 2143 (8th ed., Rev. 2) at 2100-129. The present Office Action has failed to satisfy either of the two requirements in rejecting the claims over Bechtolsheim and Harris.

There is simply no motivation or suggestion to combine the teachings of Bechtolsheim and Harris. Bechtolsheim describes a dynamic buffer management scheme implemented in a router or bridge in a network for processing incoming packets. On the other hand, Harris relates to scheduling CPU usage among a plurality of users by allocating time slices of the CPU among the users. There does not appear to be any relation between the scheduling of the CPU resource, as described in Harris, and the buffer management scheme for packets of a network described in Bechtolsheim. The current obviousness rejection is a classic example of picking and choosing arbitrary elements from unrelated prior art references in an attempt to piece together unrelated elements to achieve the claimed invention, where no motivation or suggestion existed for the combination.

It is well established law that "[t]he mere fact that the prior art could be [modified in the manner proposed] would not have made the modification obvious unless the prior art suggested the *desirability* of the modification. *In re Gordon*, 733 F.2d 900, 902, 221 U.S.P.Q. 1125 (Fed. Cir. 1984) (emphasis added). As the Federal Circuit has stated, "virtually all [inventions] are combinations of old elements." *In re Rouffet*, 149 F.3d 1350, 1357, 47 U.S.P.Q.2d 1453 (Fed. Cir. 1998). "Most, if not all, inventions are combinations and mostly of old elements." *Id.* "Therefore an examiner may often find every element of a claimed invention in the prior art. If identification of each claimed element in the prior art were sufficient to negate patentability, very few patents would ever issue. Furthermore, rejecting patents solely by finding prior art corollaries for the claimed elements would permit an examiner to use the claimed invention itself as a

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blueprint for piecing together elements in the prior art to defeat the patentability of the claimed invention. Such an approach would be 'an illogical and inappropriate process by which to determine patentability.'" *Id.*

Here, there simply did not exist any reason or desirability to incorporate the CPU scheduling scheme of Harris into the buffer management mechanism of Bechtolsheim. In fact, the router or switch of Bechtolsheim would have absolutely no need for the CPU scheduling mechanism described in Harris. The buffer manager that performs buffer management in Bechtolsheim makes the decision to either enqueue an incoming packet, tag the incoming packet, or drop the incoming packet, based on various criteria. This buffer manager does not require any CPU scheduling among a plurality of users--as all the buffer manager 25 does is receive incoming packets and makes decisions with what to do with such incoming packets. Because there is no motivation or suggestion to combine the teachings of Bechtolsheim and Harris in the manner proposed by the Office Action, the *prima facie* case of obviousness is defective for at least this reason.

Moreover, with respect to dependent claim 2, contrary to the assertion in the Office Action, Harris fails to disclose or suggest the feature of entering a reduction *mode for handling a subsequent request* for allocation of the resource. The Office Action cited to column 12, line 38 through column 13, line 22, as disclosing such a feature. The cited passage of Harris refers to normalization of a required fraction R' . Harris, 11:66-67. As explained earlier in Harris, the fraction R' is the fraction of processor time (between 0 and 1) that is allocated to a user. Harris, 10:17-22. To ensure that the allocated fraction R' for multiple users of the computer system do not exceed the value 1, the required fraction R' for each user is normalized so that the required fractions of all users in a dispatch list add to the value one. Harris, 10:32-35. The passage in columns 11, 12, and 13 of Harris cited by the Office Action refers to the different normalization cases to determine the normalized R' . Determining the normalized R' is part of the standard scheduling task performed by the scheduler of Harris, and thus does not constitute the scheduler entering a *reduction mode for handling a subsequent request* for allocation of the resource. Therefore, the hypothetical combination of Bechtolsheim and Harris fails to teach or suggest each and every element of claim 2.

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The *prima facie* case of obvious against dependent claim 2 is defective for this additional reason.

With respect to claim 3, the Office Action provided no explanation of how the specific acts of claim 3 are disclosed or suggested by Bechtolsheim or Harris. Instead, the Office Action stated that claim 3 is "rejected on the same ground as stated above," referring to the rejections of claims 2, 4, and 10. However, claim 4 depends from claim 3, and claim 10 refers to allocating a portion of a resource for system use, which is different from the three acts recited in claim 3. Claim 3 recites denying a subsequent request if the grand total allocation of the resource is above a *low watermark* associated with the resource in granting the subsequent request otherwise. The Office Action offered no explanation whatsoever of how such a "low watermark" is disclosed or suggested by Bechtolsheim or Harris, and how such a "low watermark" is used in the denying of a subsequent request.

The *prima facie* case of obviousness against dependent claims 3 and 4 is defective for this additional reason.

Similarly, with respect to dependent claim 12, there is no teaching or suggestion by Harris (contrary to the assertion in the Office Action) of a resource manager that switches to a *reduction mode* if the request if allowed would cause the grand total allocation to exceed the high watermark such that the resource manager grants all subsequent request that reduce a consumption of the resource while in the reduction mode. With respect to claim 15, Harris does not disclose or suggest a resource manager that enters a reduction mode for handling a subsequent request for allocation of the resource if the request if allowed would exceed the high watermark.

Also, claim 16 recites several acts, with the Office Action offering no explanation of how such acts are taught or suggested by Bechtolsheim or Harris.

Claim 17 recites the resource manager switching to the normal mode if the grand total allocation is below the low watermark—the Office Action provided no explanation of how such a feature is taught or suggested by Bechtolsheim or Harris.


In view of the foregoing, the *prima facie* case of obviousness against dependent claims 12 and 15-17 are defective for these further reasons.

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Allowance of all claims is respectfully requested. The Commissioner is authorized to charge any additional fees, including extension of time fees, and/or credit any overpayment to Deposit Account No. 08-2025 (10992795-1).

Respectfully submitted,

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